

The HAZTRANZ Experience: Introducing Students to the Basics and Career Opportunities Associated With Transporting Hazardous Materials

J. Holm

U.S. Department of Energy

S. Bowen, C. Little

Argonne National Laboratory

J. Passaglia

International Energy Consultants, Inc.

The U. S. Department of Energy (DOE) will be packaging and transporting radioactive material, hazardous material, and mixed wastes into the next century as part of the cleanup of its sites and facilities as well as in support of its research and operational activities. This will require a motivated and educated transportation, packaging, and associated support workforce. It will also require an informed public to choose and influence our future decision-makers. The continued success of hazardous materials transportation rests with the next several generations. We must begin now to provide them with a base of knowledge on which to build their perceptions, opinions, and career choices.

The DOE Liaison and Communications Program, under the direction of Judith Holm, has sponsored the development of a "HAZTRANZ Curriculum" to provide middle and high school-level students with a basic understanding, with emphasis on radioactive material, of who, what, why, and how hazardous materials are packaged and transported. The Liaison and Communications Program, which is part of the Department's Office of Transportation, Emergency Management and Analytical Services in the Office of Environmental Management, facilitates and coordinates outreach with interested parties and the general public on DOE transportation, emergency management, and analytical services activities.

The HAZTRANZ curriculum package consists of many activities to form "the HAZTRANZ Experience." These include (1) a video and related questionnaire to provide a general introduction to the material; (2) reference materials; (3) a vocabulary crossword puzzle; (4) hands-on activities, including designing a package and role-playing in scenarios designed to address radioactive transportation and emergency response issues; (5) an exciting board game, much like the Monopoly game, in which hazardous materials drivers make their way to their destination through inspections, regulatory requirements, adverse road conditions, bad weather, mechanical problems, and emergency situations; and (6) assessment tools (including pre- and post-tests) to determine the student's level of understanding before and after the curriculum is covered.

At the completion of the several-weeks course the students will have learned:

- The benefits derived from the shipment of radioactive and other hazardous materials;
- The extent of the safety precautions taken in packaging, labeling, and shipping hazardous materials, particularly radioactive materials;
- Information necessary for a more balanced understanding of environmental issues concerning hazardous materials;
- Basic concepts of radioactivity, including its measurement, some of its types, and some of its positive uses in contemporary society; and
- Potential career opportunities available now and in the near future in the fields related to transport of hazardous materials.

The HAZTRANZ curriculum package can be easily adapted and integrated into any middle or high school-level Chemistry or Physical Science curriculum in many areas of study, including: environmental education, nuclear energy, volume/percentage math, periodic table and measurement units, and career awareness.

The development of this curriculum was accomplished in cooperation with representative teachers from the Teachers' Workshop held annually at Argonne National Laboratory through the Division of Educational Programs. Their input on content and methods of presentation were invaluable in the effectiveness of this product. Many scientist and radioactive material handling personnel on site at Argonne National Laboratory also contributed their expertise in the many disciplines included in the HAZTRANZ curriculum package.

It is hoped that this simplified, but comprehensive, overview explaining the characteristics, uses, and potential risks of hazardous materials (particularly radioactive materials), and the precautions taken to manage their safe shipment from source to destination, will begin the middle and high school student's journey to understanding, and perhaps entering, the world of hazardous materials transportation.

A limited number of copies of the HAZTRANZ Experience package are available. Anyone who can make appropriate use of this curriculum should contact Karen DeLara-Menozi, 223-M170, Division of Educational Programs, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439 - telephone 708 252-4495, fax 708 252-3193.